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**PATENT APPLICATION**  
**ATTORNEY DOCKET NO. D/A0309I3I2D**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

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**JEFFREY H. BANNING ET AL.**

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**Application for Patent**

**Application No.: 09/772,617** : **Examiner: S. Wright**  
**Filed: January 30, 2001** : **Art Unit: 1626**

**PHASE CHANGE INK FORMULATIONS, COLORANT FORMULATIONS, AND  
METHODS OF FORMING COLORANTS**

**BRIEF ON APPEAL**

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**1. REAL PARTY IN INTEREST:**

Xerox Corporation, assignee of the present patent application.

**2. RELATED APPEALS AND INTERFERENCES:**

None.

**3. STATUS OF CLAIMS:**

Claims 68 to 73 are allowed.

Claims 1 to 9 and 67 are rejected.

Claims 10 to 66 are cancelled.

**4. STATUS OF AMENDMENTS:**

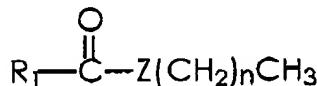
Appellants' Amendment After Final Rejection dated July 11, 2002 was considered by the Examiner but did not overcome the rejection.

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**5. SUMMARY OF INVENTION:**

Appellants' invention is directed to a compound having the formula



wherein  $\text{R}_1$ ,  $\text{Z}$  and the carbonyl can be comprised by a common ring, wherein  $\text{R}_1$  comprises a chromophore that absorbs light from the visible wavelength range; wherein  $\text{Z}$  is an atom or group of atoms, said atom or group of atoms including at least one atom selected from the group consisting of C, O, N and S; and wherein  $n$  is an integer that is at least 39.

**6. ISSUE:**

Whether claims 1 to 9 and 67 are patentable under 35 U.S.C. §112, first paragraph.

**7. GROUPING OF CLAIMS:**

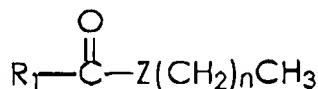
The rejected claims do not stand or fall together. Appellants will discuss the patentability of all of the appealed claims with respect to §112, first paragraph. In addition, claims 6, 7, 8, 9, and 67 are discussed separately with respect to §112, first paragraph.

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**8. ARGUMENT:**

The present invention is directed to a compound having the formula



wherein  $\text{R}_1$ ,  $\text{Z}$  and the carbonyl can be comprised by a common ring, wherein  $\text{R}_1$  comprises a chromophore that absorbs light from the visible wavelength range; wherein  $\text{Z}$  is an atom or group of atoms, said atom or group of atoms including at least one atom selected from the group consisting of C, O, N and S; and wherein  $n$  is an integer that is at least 39. Advantages of the present invention include substantial hydrophobic character, solubility in materials used as carriers for phase change inks, and other advantages as set forth in the specification and illustrated in the examples.

With respect to the rejection under §112, first paragraph, the Examiner has stated that in claim 1, the term "chromophore" is not defined in the specification so as to ascertain the structures of the compounds that are included or excluded by the term, and that the specification has therefore failed to provide adequate support for claims 1 to 5 as written. The Examiner has also stated that the specification on page 6, lines 13 to 18, lists preferred chromophores and examples of chromophores, but that this list is not comprehensive and does not consist of all chromophores encompassed in claim 1.

Appellants point out that claim 1 is intended to encompass compounds wherein  $\text{R}_1$  is any chromophore that absorbs

light from the visible wavelength range, including, but not limited to, those listed in the specification. Appellants agree that the list does not consist of all chromophores encompassed in claim 1. Appellants disagree with the Examiner's apparent position that R<sub>1</sub> should be limited to those chromophores explicitly disclosed in the specification. The first sentence of the second paragraph of §112 is essentially a requirement for precision and definiteness of claim language. If the scope of subject matter embraced by a claim is clear and if Appellants have not otherwise indicated that they intend the claim to be of a different scope, then the claim particularly points out and distinctly claims the subject matter which Appellants regard as their invention. In re Borkowski et al., 422 F.2d 904, 164 U.S.P.Q. 642 (CCPA 1970); In re Robins, 429 F.2d 452, 166 U.S.P.Q. 552 (CCPA 1970). Appellants are entitled to broad claims commensurate in scope with the invention as disclosed. See In re Kamal et al., 398 F.2d 867, 158 U.S.P.Q. 320 (CCPA 1968). Having clearly disclosed in the specification that R<sub>1</sub> is any chromophore that absorbs light from the visible wavelength range, and having provided a broad range of classes of chromophores as examples of suitable R<sub>1</sub> groups, Appellants are entitled to claims of the present scope, and are of the position that these claims satisfy the requirements of §112, first paragraph.

Appellants further point out that this ground for rejection does not apply to claims 6, 7, 8, 9, and 67, all of which recite specific chromophores for the R<sub>1</sub> group.

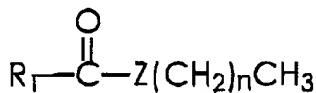
The Examiner has also stated that claim 1 defines "n" as an integer that is at least 39, that the specification defines "n" as an

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integer that is at least 12, that although the definition of "n" in the specification encompasses "n as an integer that is at least 39", it does not specifically define or exemplify n having a lower limit of 39, and that because Appellants have not shown a reason for n having a lower limit of 39, this limitation is new matter.

Appellants disagree with this position. Support for this amendment to the claims can be found in the specification as filed at, for example, page 4, lines 4 to 9, and page 4, line 28 to page 5, line 5. More specifically, at page 4, lines 3 to 8, the specification states that "[t]he new colorants have a substantial amount of hydrophobic character. In one aspect, the hydrophobic character is imparted by incorporating at least one alkyl or alkoxylate chain that is at least 13 carbon units long into colorants of the present invention. In particular embodiments, the alkyl or alkoxylate chain is at least 20 carbon units long, and in other embodiments at least 40 carbon units long." Appellants point out that in the compounds of the present invention of the formula



an alkyl chain at least 40 carbon units long is present when n is at least 39. Accordingly, Appellants are of the position that this amendment to the claims to recite that n is at least 39 does not constitute new matter, and are of the position that these claims satisfy the requirements of §112, first paragraph.

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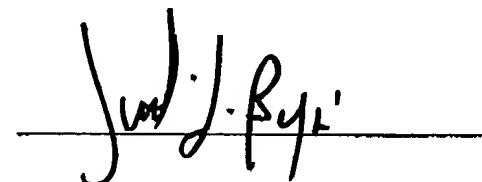
**CONCLUSION:**

For the reasons set forth herein, Appellants are of the position that the claims of the present application are patentable with respect to 35 U.S.C. §112, first paragraph, and accordingly respectfully request that the Board of Patent Appeals and Interferences reverse the Examiner's rejections of the claims.

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Respectfully submitted,



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November 7, 2002

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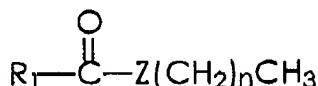
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9. APPENDIX:CLAIMS APPEALED:

The following are the appealed claims:

1. A compound having the formula:

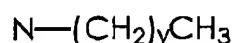


wherein  $\text{R}_1$ ,  $\text{Z}$  and the carbonyl can be comprised by a common ring, wherein  $\text{R}_1$  comprises a chromophore that absorbs light from the visible wavelength range; wherein  $\text{Z}$  is an atom or group of atoms, said atom or group of atoms including at least one atom selected from the group consisting of C, O, N and S; and wherein  $n$  is an integer that is at least 39.

2. The compound of claim 1 wherein  $n$  is not more than 299.

3. The compound of claim 1 wherein  $\text{Z}$  is NH.

4. The compound of claim 1 wherein  $\text{Z}$  is



wherein  $y$  is an integer of from 0 to 300, and can be the same as or different than  $n$ .

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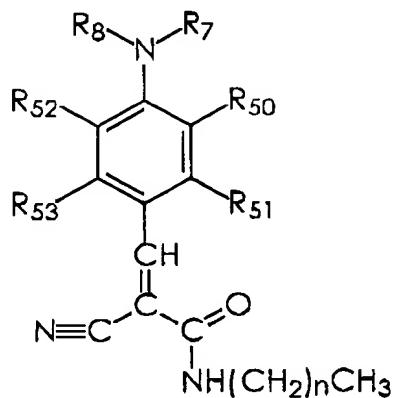
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5. The compound of claim 1 wherein the R<sub>1</sub> and the carbonyl together comprise a chemical group selected from the group consisting of ester, lactone, amide, lactam, and imide.

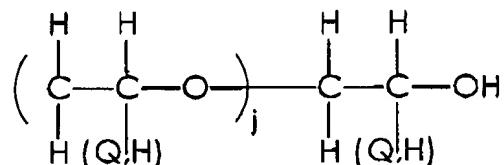
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6. The compound of claim 1 having the formula



wherein  $\text{R}_{50}$ ,  $\text{R}_{51}$ ,  $\text{R}_{52}$ , and  $\text{R}_{53}$  are selected from the group consisting of hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another, and wherein at least one of  $\text{R}_7$  and  $\text{R}_8$  comprises a chain having the formula,

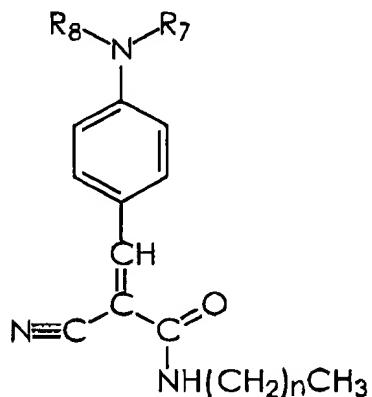


wherein  $j$  is an integer from 0 to about 300, wherein the representation of " $(\text{Q},\text{H})$ " indicates that either a group  $\text{Q}$  or a hydrogen can be in the shown positions, wherein the group  $\text{Q}$  is either an alkyl group or an aryl group, and wherein  $\text{Q}$  can vary amongst different alkyl and aryl groups within the chain.

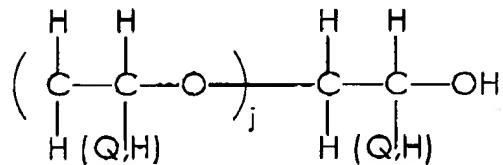
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7. The compound of claim 1 having the formula



wherein at least one of R<sub>7</sub> and R<sub>8</sub> comprises a chain having the formula,

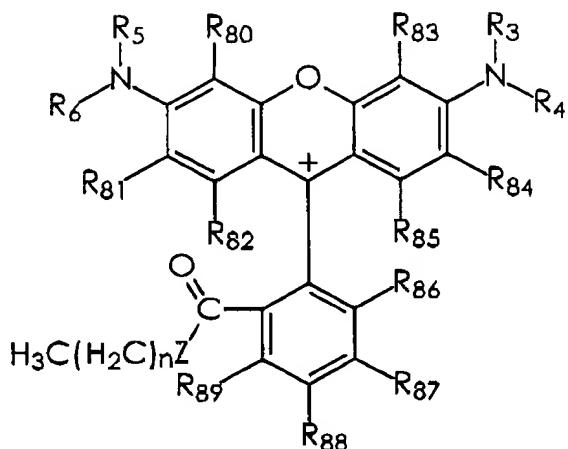


wherein j is an integer from 0 to about 300, wherein the representation of "(Q,H)" indicates that either a group Q or a hydrogen can be in the shown positions, wherein the group Q is either an alkyl group or an aryl group, and wherein Q can vary amongst different alkyl and aryl groups within the chain.

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8. The compound of claim 1 having the formula

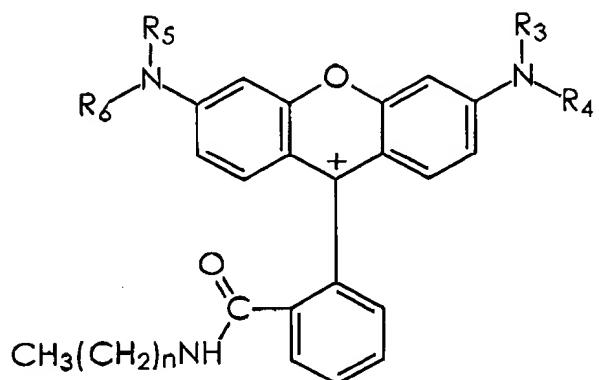


wherein R<sub>80</sub>, R<sub>81</sub>, R<sub>82</sub>, R<sub>83</sub>, R<sub>84</sub>, R<sub>85</sub>, R<sub>86</sub>, R<sub>87</sub>, R<sub>88</sub>, and R<sub>89</sub> are selected from the group consisting of hydrogen, halogens, hydroxy groups, alkoxy groups, trifluoromethyl groups, and alkyl groups, and can be the same as one another or different than one another; wherein R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> are selected from the group consisting of hydrogen and carbon-containing materials and can be the same or different than one another.

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9. The compound of claim 1 having the formula



wherein R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> are selected from the group consisting of hydrogen and carbon-containing materials and can be the same or different than one another.

67. The compound according to claim 1 wherein R<sub>1</sub> comprises a chromophore selected from the group consisting of methine, metal phthalocyanine, azamethine, azo, triphenylmethane, rhodamine, xanthene, indoaniline, pyridone, perylene, anthrapyridone, and anthraquinone.